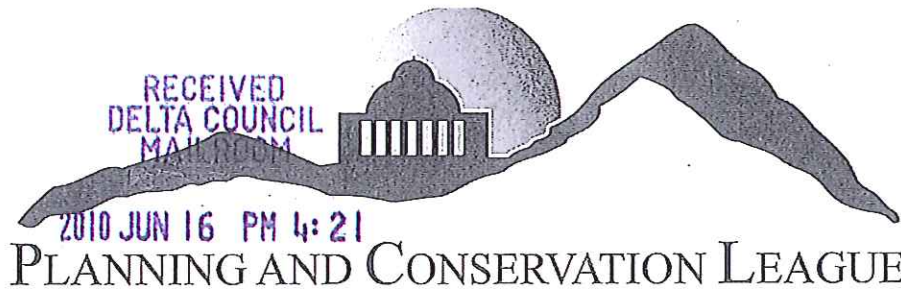


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Enclosed in this packet you will find PCL's newest report, *8 Affordable Water Solutions for California*.

The report details the challenges California faces in managing its water supply and advances eight positive solutions for surmounting those difficulties. The solutions emphasize practicality and affordability and include: water-neutral development, crafting guidelines for increasing the use of recycled water, and converting drainage-impaired land to solar generation.

Together, the solutions offer a positive program that can help provide Californians with the water they need while preserving the health of key fisheries and ecosystems. Over the next few weeks, PCL staff will be briefing legislators, editorial boards, and agencies on how they can work to advance the eight solutions and give California's residents, businesses, and environment a secure water future.

For more information, or to schedule a briefing for your organization, please contact Evon Chambers at echambers@pcl.org or (916) 313-4509.

Warmest Regards,

Evon Chambers – Water Policy & Planning Analyst



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8 Affordable Water Solutions for California



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About the Planning and Conservation League

We are a 501(c)(4) nonprofit lobbying organization, working in the State Legislature and at the administrative level in state government to enact and implement policies to protect and restore the California environment.

We partner with hundreds of California environmental organizations to provide an effective voice in Sacramento for sound planning and responsible environmental policy at the state level.

Our work has been recognized by an official resolution of the Legislature which stated that “participation on every key environmental issue before the State Legislature has demonstrated PCL’s effectiveness in preserving the quality of life for all Californians.”

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Front Cover Images Credit:

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Overview

INTRODUCTION

Three realities confront California as our state seeks to reform how we manage our limited water resources: the financial crisis, the collapse of critical fisheries, and a changing and uncertain hydrology. First, the global financial crisis has left California with daunting budget shortfalls for three consecutive years, unemployment is currently over ten percent, and state revenues continue to fall. Second, the risk of mass extinctions in the Sacramento-San Joaquin Delta (the Delta) has led to a complete ban on commercial salmon fishing for two consecutive years and restrictions on water diversions. Lastly, the changing climate is causing more precipitation to fall as rain instead of snow, and this reduced snowpack has led to decreased water supplies.

In the face of these challenges, water managers are struggling to accommodate growth and secure reliable water without untenable rate increases to consumers or devastating our fragile natural environment. These uncertain economic and environmental times call for new ideas and innovative solutions. Therefore, the Planning and Conservation League has developed this affordable eight-point program that moves us closer to healthy fisheries and safe drinking water for existing residents and well-planned growth. The proposals in this program all provide new water for California without further busting our state's budget.

FINANCIAL CRISIS

Along with the rest of the country, California is in the worst financial crisis since the Great Depression, with unemployment above 10 percent. In July 2009, Fitch Investors lowered California's general obligation bond rating from A- to BBB — just two grades above “junk” bond status. By the end of 2010, California must resolve a \$19.9 billion budget deficit, with a \$6.6 billion shortfall for the fiscal year ending in June 2010 and a \$13.3 billion shortfall for the following fiscal year.

Resolving the current deficit in light of the severe budget cuts of the last two years will be extremely difficult — the Governor's proposed budget for 2010-2011 cuts nearly 20% from Health Care Services, and eliminates In-Home Supportive Services for 87% of the elderly and physically and mentally disabled people the program serves.ⁱ

Given the hard choices facing lawmakers and the sacrifices Californians have already made, the solutions to our state's water crisis must emphasize regional self-sufficiency and be affordable for the state. The twentieth-century approach of state-funded mega-projects is no longer an option. As State Treasurer Bill Lockyer cautioned in the 2009 Debt Affordability Report, “The case for user-funding for most water system improvements is compelling, both as a matter of equity and fiscal prudence.”



© Vince King

FISHERIES COLLAPSE

California's commercial fishing industry and the ecological health of our fisheries have been severely compromised by outdated water policies. This was evident in the Fall of 2009, when only 39,500 salmon returned to the Delta, compared to 804,000 spawning salmon that had returned to the Delta eight years earlier. In response to this collapse, in 2008 California banned all coastal salmon fishing, interrupting nearly two centuries of commercial fishing in the state. Other species of fish, like the delta smelt, are on the brink of extinction, and scientists have identified overpumping water from the Sacramento-San Joaquin Delta as one of the major causes of their decline. In addition to devastating California's fishing industry, the fisheries collapse has bred controversy as water diversions from the Delta are restricted in an effort to restore struggling ecosystems.

Proactive new water policies are needed to ensure that enough water is provided for the Delta ecosystem. A healthy Delta, managed according to the most current science, will ensure that native species of fish can recover, fisherman can go back to work, and those relying on water diverted from the Delta can be more certain of their water supply.

CHANGING HYDROLOGY

The future of California's hydrology is uncertain, but there is one consensus: it will change. The Department of Water Resources estimates that a warming climate will cause more of our precipitation to fall as rain, rather than snow. By 2050, we will see the volume of water stored naturally every year as snow decrease by between 3.8 and 6 million acre-feet. At the same time, rising temperatures will cause more water to evaporate from the snowpack, rather than accumulate as run-off and fill streams and reservoirs.

Other studies suggest that California will have periods of long-term drought: a University of California Davis geochemist recently correlated historic prolonged droughts in California with periods of rapid Arctic warming.ⁱⁱ Some of these historic droughts lasted for more than 100 years.

Given the uncertainty of future hydrology in California, water policies for the coming decades must be flexible enough to accommodate changing circumstances. California's portfolio of water projects and policies should be robust, providing long-term solutions for a wide range of scenarios, including less annual precipitation, more extreme dry and wet periods, and a shift toward rain rather than snow.

NEW SOLUTIONS

1. Spend existing bond funds first to provide safe drinking water to communities in need.

While over \$3 billion in voter-approved bonds for clean water projects remain unspent, hundreds of thousands of Californians lack clean drinking water. Before voters are asked to approve more bond dollars, the state should allocate existing funds for priority water projects. This fiscally conservative approach would address drinking water problems and stimulate job growth.

2. Develop public health standards to increase the amount of water that California can safely recycle and reuse.

Every year, California discharges 4 million acre-feet of used water to the ocean. The Department of Public Health should create statewide criteria for safely recycling this water to allow California to reclaim it for potable use. Creating uniform standards would ensure public safety and reduce up-front recycling plant design costs.

3. Adopt and enforce updated flow and water quality standards for the state's major waterways.

To protect against the further collapse of the state's fisheries and improve the certainty of water supplies, the State Water Resources Control Board must update and enforce flow

standards for the Delta and all major waterways. Flow standards will allow the State Board to make informed decisions about how much water can be pumped from rivers and streams while still protecting the state's fisheries and preserving California's fishing economy.

4. Analyze the potential of a smaller tunnel to convey some water around the Bay-Delta.

The Bay-Delta Conservation Plan (BDCP) is focusing on obtaining Endangered Species Act approval for a massive diversion of water around the Bay-Delta. Due to potential fatal flaws in that project, the BDCP should analyze a smaller dual-conveyance alternative consisting of one 3,000 cubic feet per second screened intake and tunnel combined with environmentally sustainable levels of diversions from the South Delta. This smaller tunnel may produce better outcomes for fisheries, minimize costs to water exporters, and provide an emergency water supply in the event of levee failure.

5. Implement water-neutral developments to enhance regional self-sufficiency.

Many cities and counties in California are struggling to provide water for residential growth without compromising public resources or causing unaffordable rate increases for current residents. Water Neutral Development is an innovative solution that allows new developments to offset their water demand by making investments in regional conservation, water recycling, and local storm water capture projects – investments that stimulate local job creation.

6. Use drainage-impaired lands in the San Joaquin Valley to generate solar energy.

Unsolvable drainage problems will make hundreds of thousands of acres of agricultural land in the San Joaquin Valley unfarmable. Converting these lands to large-scale solar projects would save hundreds

of thousands of acre-feet of water annually, make California a leader in carbon-free energy generation, and create solar installation, operations, and maintenance jobs.

7. Protect California's primary source of clean water.

The Sierra headwaters annually produce over \$2.2 billion in natural products and services for California's health and welfare, including 55-65% of our developed water supply, but the state lacks reliable funding to protect our water source. The State Legislature should create a new rate component for Sierra hydroelectric facilities that would provide consistent funding for the Department of Conservation's Statewide Watershed Program. Stable funding to manage upstream habitat, reduce erosion, and slow runoff in California's headwaters would also create rural jobs, protect communities from wildfire, and increase the efficiency of existing hydroelectric facilities.

8. Advance a smaller water bond when the economy recovers.

State bonds are the only source of funding for many essential public resources; however, new debt service from a water bond will only be appropriate when California's economy recovers. At that time, California should advance an affordable water bond of about \$3 billion that will finance high priority water projects and restore habitat. A smaller bond could create jobs without imposing cuts to critical public services when the state's economy is at its worst.



Courtesy Steve Hillebrand / USFWS

SPEND EXISTING FUNDS FIRST

While \$3 billion in voter-approved bonds for water projects remain unspent, hundreds of thousands of Californians lack clean drinking water. Before voters are asked to approve more bond dollars, the state should allocate existing funds for priority water projects. This fiscally conservative approach would address drinking water problems and stimulate job growth.

THE NEED FOR CLEAN WATER

A 2002 study from Lawrence Livermore National Labs estimated that about 10% of California's public drinking water wells exceed the regulatory limits for nitrates.ⁱ In some areas of the Central Valley, like Tulare County, nitrates exceed legal limits in 40 percent of private wells.ⁱⁱ In disadvantaged communities in these regions, residents cannot afford the costly treatment plants that are required to remove the contaminants, and many are forced to travel miles away to buy water that is safe to drink.



Courtesy Community Water Center

PRIORITIZING CRITICAL PROJECTS

As a result of the financial crisis, funding to help these disadvantaged communities develop sources of safe, clean, drinking water stalled out. In 2008 and 2009 millions of dollars for critical drinking water programs dried up because the state could not pay its bills, leaving many projects frozen and others unable to get off the ground.

Although some clean drinking water projects have finally started to receive funding, the financial crisis and the worsening budget continue to make it difficult for the state to borrow money by selling more bonds. With the cash flow for clean water programs reduced to a trickle, many communities in California continue to receive water that contains toxic levels of pollutants such as nitrates and arsenic.

As long as the state struggles to sell enough bonds to finance the projects that voters have approved in past bond measures, the Department of Finance and the Governor's office must be selective and choose which projects it will prioritize as bonds are sold.

As the administration selects projects to receive the limited bond funding that is available, it should use the funds that voters have already approved to address the state's top water priority: providing clean drinking water to the communities that are most in need.

REMAINING WATER BOND FUNDS

* A portion of these funds can be spent on critical drinking water remediation and infrastructure projects to provide safe drinking water to communities in need.

PROPOSITION 84 ⁱⁱⁱ	ALLOCATION	BALANCE
* Safe Drinking Water and Water Quality Projects	\$1,525,000,000	\$980,051,000
Flood Control	\$800,000,000	\$48,440,000
* Statewide Water Planning and Design	\$65,000,000	\$26,917,000
Protection of Rivers, Lakes and Streams	\$928,000,000	\$215,097,000
Forest and Wildlife Conservation	\$450,000,000	\$28,549,000
Protection of Beaches, Bays and Coastal Waters	\$540,000,000	\$118,447,000
Parks and Nature Education Facilities	\$500,000,000	\$93,227
* Sustainable Communities & Climate Change	\$580,000,000	\$344,391,000
TOTAL	\$5,388,000,000	\$1,761,985,227[†]

PROPOSITION 50 ^{iv}	ALLOCATION	BALANCE
Water Security	\$50,000,000	\$37,143
* Safe Drinking Water	\$435,000,000	\$120,215,805
* Clean Water & Water Quality	\$370,000,000	\$2,577,525
* Contaminant and Salt Removal Technologies	\$100,000,000	\$6,822,476
Cal-FED Bay Delta Program	\$825,000,000	(\$51,196,796)
* Integrated Regional Water Management	\$640,000,000	\$145,000,000
Colorado River	\$70,000,000	\$2,225,674
Coastal Watershed & Wetland Protection	\$950,000,000	(\$53,599,411)
TOTAL	\$3,440,000,000	\$44,896,810[†]

PROPOSITION 1E ^v	ALLOCATION	BALANCE
State Plan of Flood Control	\$3,000,000,000	\$976,615,000
Flood Control and Flood Prevention Projects	\$500,000,000	\$396,600,000
Flood Protection Corridors & Bypasses	\$290,000,000	\$121,926,000
Storm Water Flood Management	\$300,000,000	\$64,696,000
TOTAL	\$409,000,000	\$1,416,687,000[†]

Total Bond Funding Remaining: **\$3,223,569,037**

[†] Total balances reflect past and pending appropriations as well as bond expenditures and may not be the sum of the balances above.

INCREASE WATER RECYCLING

Every year California discharges 4 million acre-feet of used water to the ocean. The Department of Public Health should create statewide criteria for safely recycling this water to allow California to reclaim it for potable use. Creating uniform standards would ensure public safety and reduce up-front recycling plant design costs.

A GLIMPSE OF THE FUTURE

In February of 2009, the State Water Resources Control Board unanimously adopted a new water recycling policy that included the goal of increasing California's annual use of recycled water by at least 1 million acre-feet by 2020, and by 2 million acre-feet by 2030. As California works to meet this goal, recycled water is becoming more popular, not only for urban irrigation and industrial cooling, but also for recharging overdrafted groundwater basins and depleted reservoirs.

The Orange County Groundwater Replenishment System, constructed in 2008, uses microfiltration, reverse osmosis, ultraviolet light and hydrogen peroxide disinfection to purify recycled water before it is injected into surrounding groundwater basins. Every day, the system creates more than 70 million gallons of clean water – enough for 500,000 people.¹ Responding to the success of the Orange County System, other areas are expressing

interest in using recycled water to supplement their local potable water supply.

The City of San Diego is also working to demonstrate the viability of using recycled water with a pilot Indirect Potable Reuse Project that will augment local supply in San Vicente Reservoir. When finished, the full-scale project will provide a safe, drought-resistant, local supply of clean drinking water to the region's residents.

ESTABLISHING STANDARDS

These projects demonstrate the potential for California to increase its water recycling. However, because uniform health standards have not yet been adopted, the permitting process for such projects is unpredictable and includes unnecessary costs. Uniform health standards would make the design of recycling plants more straightforward, decreasing the cost of planning and construction. With established state health



The Orange County Water Recycling facility.

Courtesy the Orange County Sanitation District

standards, the permitting process would be more certain, making water recycling plants a more reliable investment for financiers and enabling regions to safely meet California’s statewide goal of producing 1 million acre feet of recycled water by 2020 and 2 million acre-feet by 2030.

The California Department of Public Health should encourage projects similar to Orange County’s Groundwater Replenishment System and San Diego’s Indirect Potable Reuse Project by finalizing their standards for safely using recycled water for groundwater recharge, and developing standards for surface water augmentation.

In creating the safety criteria for surface water augmentation, the Department of Public Health should:

(a) Convene and consult a panel of experts including a toxicologist, a certified engineering geologist or certified hydro-geologist, an engineer licensed in California with at least three years experience in wastewater treatment and public water supply, a microbiologist, and a chemist.

(b) Convene and consult an advisory group or task force with representatives from water and wastewater agencies, local public health officers, and environmental, environmental justice and public health non-governmental organizations.

(c) Consult water recycling regulations and guidelines from jurisdictions in other states or countries.

(d) Incorporate research by the State Water Board regarding unregulated pollutants.

The finalized criteria will provide project designers with the guidance they need to cost-effectively design new facilities that are fully protective of public health.



Courtesy the Orange County Sanitation District

“Orange County Water Recycling creates more than 70 million gallons of clean water every day – enough for 500,000 people.”

SCIENCE-BASED FLOW STANDARDS

To protect against the further collapse of the state's fisheries and improve the certainty of water supplies, the State Water Resources Control Board must update and enforce flow standards for the Delta and all major waterways. Maintaining up-to-date flow standards will allow the State Board to make informed decisions about how much water can be pumped from rivers and streams while protecting the state's fisheries and preserving California's fishing economy.

NEED FOR NEW STANDARDS

The collapse of California's fisheries culminated in a complete ban on commercial salmon fishing in 2008 and 2009. Responding to the crisis, state and federal agencies have had to curtail water pumping from the Sacramento-San Joaquin Delta in an effort to avoid the complete extinction of salmon, smelt, and other endangered aquatic species that live there. The economic and environmental collapse has highlighted the necessity of up-to-date, enforceable flow standards that act to prevent, rather than react to, crises.

In a package of bills passed late in 2009, the California legislature directed the State Board to develop public trust flow criteria for the Delta ecosystem, acknowledging that agencies will need standards that specify the amount of water the Delta and its tributaries need to sustain healthy ecosystems.



Courtesy Dan Bacher, Fish Sniffer Staff

However, previous water quality control plans have produced flow data that remains unutilized in day-to-day management. The flow criteria process must serve as the foundation for State Board proceedings to approve an enforceable in-stream flow standard.

As the State Board develops flow criteria for the Delta, they should take the opportunity to proactively reevaluate their approach to standards not only in the Delta, but across California. Many of the state's other major waterways and rivers are managed based on standards that were established decades ago and are no longer be up-to-date.

For example, on the Lower American River, the existing standards for releases from Folsom Dam were adopted in 1958.ⁱ These standards do not reflect the many changes in California's water landscape over the past 52 years, and do not incorporate significant new scientific information that should guide the river's management.

The process of developing new standards does not have to be onerous. In some cases, the information to correct oversights and bring flow standards up-to-date is readily available. For example, a draft standard for the Lower American River is already completed – it simply needs to be vetted and adopted by the State Board.



© Vince King

CONTINUOUSLY UPDATED STANDARDS

Flow requirements which reflect the most recent science will only become more important as climate change continues to affect water temperatures and general ecosystem conditions. However, despite the importance of adaptive standards, there is no sustained source of funding for the State Board to ensure that its standards reflect changing environmental conditions.

Without a program to maintain informed flow standards, state agencies will have to allocate funding for crucial in-stream flow studies following crises, like the collapse of California's salmon fisheries, rather than maintaining up-to-date operational criteria in order to prevent them. This reactive approach to adapting flow requirements will create unreliability in water supplies and continue the march to the extinction for the species that depend on California's waterways.

In developing a reliable source of funding to conduct proceedings that identify and adopt in-stream flow studies, the State Board could draw upon its existing fee authority for water diverters. The proceeds from the fee could be used to develop and periodically update flow standards across California.

**“The flow
standard for the
Lower American
River hasn’t been
updated **since**
1958.”**

ANALYZE SMALLER DELTA TUNNEL

The Bay Delta Conservation Plan (BDCP) is focusing on obtaining Endangered Species Act approval for a massive diversion of water around the Bay-Delta. Due to potential fatal flaws in that project, the BDCP should analyze a smaller dual-conveyance alternative consisting of one 3,000 cubic feet per second screened intake and tunnel combined with environmentally sustainable levels of diversions from the South Delta. This smaller tunnel may produce better outcomes for fisheries, minimize costs to water exporters, and provide an emergency water supply in the event of levee failure.

CURRENT FOCUS

There is scientific agreement that the current method of conveying so much water through the Sacramento-San Joaquin Bay-Delta is a major cause of the ecosystem's collapse. The Bay-Delta Conservation Plan (BDCP) is the current effort to obtain Endangered Species Act approval for an alternative project to transport water around the Delta. The BDCP is currently focused on considering a proposed project with five water intakes and a canal or set of tunnels with the capacity to divert 15,000 cubic feet per second of Sacramento River water.ⁱ

This large facility faces four significant obstacles:

First, the prospective costs for this concept have jumped from an initial estimate of just under \$4 billionⁱⁱ to over \$10 billionⁱⁱⁱ and are likely to rise further, making it unaffordable for the agricultural

and urban water users who would have to pay for it^{iv}.

Second, the prospects of success with this large and costly facility are uncertain. It is unclear how the project would be operated, including how operations would adapt to changing information and circumstances. Nor is it clear what the environmental and economic impacts would be from a large facility. It does not make sense to spend upwards of ten billion dollars on a facility that may not produce positive outcomes for the environment or be a reliable source of water for exporters.

Third, the project faces strong opposition from farmers, residents, and recreators in the Delta and elsewhere.

Lastly, there is significant uncertainty about whether the federal regulatory agencies would approve such a massive project under the Clean Water Act and the Endangered Species Act.

A NEW OPTION

The BDCP should consider the alternative that includes a 3,000 cubic feet per second screened intake and tunnel combined with acceptable levels of water diversions from the South Delta. This conservative intake and tunnel may have multiple advantages. Specifically:

- A tunnel, as opposed to an open 45-mile canal, would avoid massive impacts to agriculture and terrestrial species, which would reduce project costs.



Locke, CA in the Sacramento-San Joaquin Delta.
© A.A., All Access Image

- A smaller tunnel with one intake is more affordable than a larger canal with five intakes.
- The smaller tunnel matches up to the already-identified 3,000 cubic feet per second maximum intake size that avoids impinging salmonids on the fish screens.
- A smaller tunnel with an intake upstream on the Sacramento River can allow for reduced South Delta diversions when fish are in that area of the estuary.
- A water intake on the Sacramento River would maintain emergency water supplies to Delta exporters if South Delta diversions become unusable due to catastrophic levee failure.
- A smaller tunnel would face less opposition than the large Peripheral Canal.
- A smaller tunnel has fewer unforeseen consequences than those that could result from a

“A smaller tunnel might reduce the risk of unforeseen consequences.”

larger facility.

- Operation of a smaller tunnel will provide state and federal operators an opportunity to evaluate how effectively a new conveyance structure is being managed, allowing for fine-tuning before further changes in diversions are considered.

With the rising costs and uncertainty surrounding the originally-proposed project, the members of the BDCP and regulators should carefully evaluate a smaller and more affordable alternate conveyance facility.



©Carina Port

WATER-NEUTRAL DEVELOPMENT

Many California cities and counties are struggling to provide water for residential and commercial growth without compromising public resources or causing unaffordable rate increases for current residents. Water Neutral Development is an innovative solution that allows new developments to offset their water demand by making investments in regional conservation, water recycling, and local storm water capture projects – investments that stimulate local job creation.

ENSURING RELIABLE WATER

Existing California law (SB 610, 2001) requires local governments and utilities to assess prospective water supplies when reviewing residential development projects with more than 500 units. A second law (SB 221, 2001) requires a written verification from the responsible water utility that the project will have a reliable long-term (20-year) water supply. These “show me the water” laws are intended to ensure that existing residents’ rights to clean and reliable water supplies are considered when new developments are being evaluated, and that new projects will have secure water supplies.

However, water agencies and developers are finding it increasingly difficult to demonstrate that sufficient water will be available to serve new developments. This challenge is only going to intensify – the Department of Finance estimates that California’s population will increase by approximately 23 million people in the next 40 years.¹

In the past, regional water utilities have accommodated population growth with new water infrastructure financed by rate increases and public tax dollars. This approach to financing is increasingly unpopular with ratepayers and constrained state and local budgets can make it unfeasible. In some regions, the cost of new traditional infrastructure projects is prohibitive.

NO NET WATER DEMAND

As an alternative, land use agencies, developers, and water agencies can agree that their new



Courtesy Brad Lancaster, www.HarvestingRainwater.com

development will be “water neutral.” In this model, a developer commits to on-site water conservation and recycling to minimize the demand created by the development, and then contributes to a demand mitigation fund. The proceeds from this fund are invested in water efficiency technologies, local stormwater capture, groundwater clean up, or recycling programs within the area to offset any remaining demand from the development. This ensures that the net impact of the new project on the region’s water supply is neutral while at the same time providing funding to retrofit leaky and inefficient plumbing and appliances in aging and disadvantaged communities.

According to the Los Angeles County Economic Development Corporation, “Conservation alone will not solve Southern California water needs, but it is a hugely important strategy – the cheapest, easiest, and most environmentally-friendly means of improving reliability.”ⁱⁱⁱ

This “water neutral” development model has been successfully applied in California’s Contra Costa County. When a group of developers sought approval for the Camino Tassajara Project, the local water agency determined that its existing supply constrained its ability to provide the project with reliable water. The developer overcame the challenge with an agreement to ensure that the development would have a net-positive impact on the region’s water supply.

THREE STEPS TO WATER NEUTRALITY

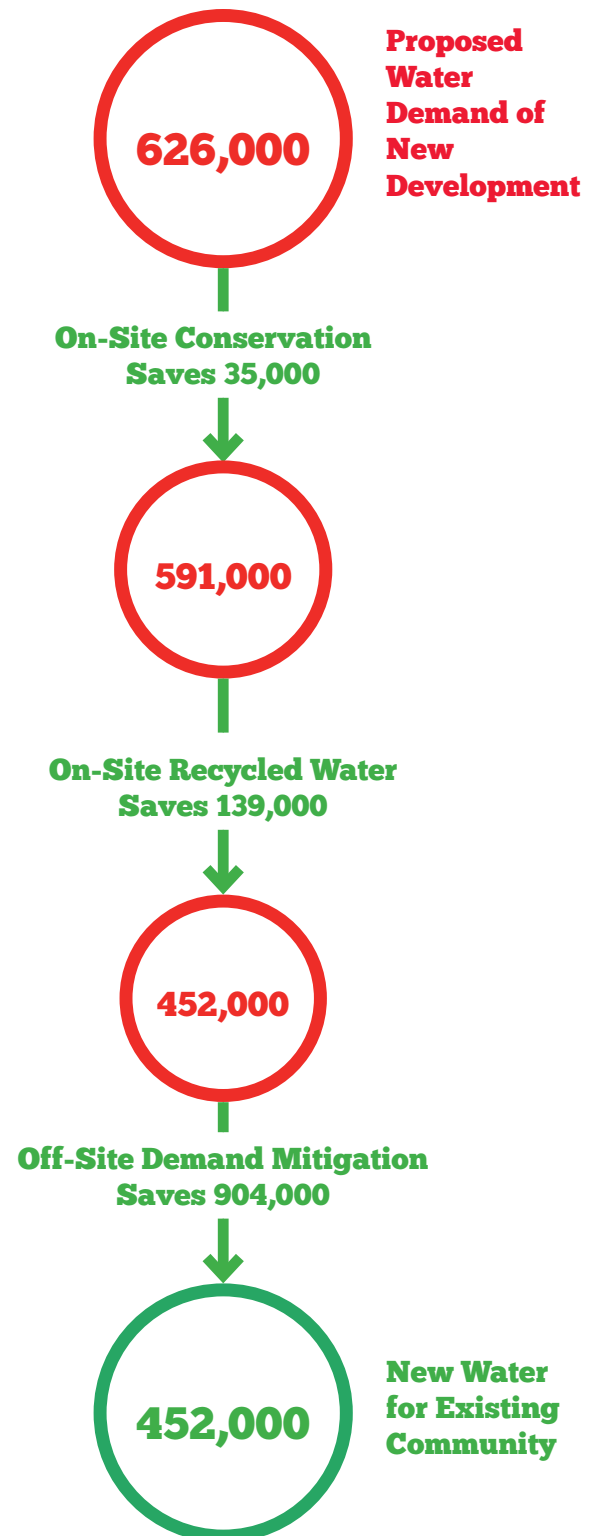
The Camino Tassajara plan called for three measures:

1. On-Site Water Conservation: water efficient irrigation systems, ultra-low flow and dual flush toilets, recycled water pipelines, high-efficiency washing machines (if installed by the developer), sub-metering of multi-family housing, and drought-tolerant landscaping.
2. Water Demand Mitigation Fees: funding water conservation measures sufficient to offset remaining project water demand.
3. Water Budgeting: monitoring to ensure that the project stays within its water budget.

For the Camino Tassajara project, the developer and the water agency agreed that the project would result in a net gain for existing water users. In other areas, a one-to-one offset may be more appropriate.

By employing this strategy, planners can ensure that projects do not negatively impact local water security and avoid burdening their ratepayers with unsustainable rate hikes. For areas of the state facing water shortages, this tool offers builders and planners a way to facilitate well-planned growth while improving water efficiency within the existing community.

CAMINO TASSAJARA WATER USE (in gallons per day)



SAN JOAQUIN VALLEY SOLAR

Unsolvable drainage problems will make hundreds of thousands of acres of agricultural land in the San Joaquin Valley unfarmable. Converting these lands to large-scale solar projects would save hundreds of thousands of acre-feet of water annually, make California a leader in carbon-free energy generation, and create solar installation, operations, and maintenance jobs.

INEVITABLE INFERTILITY

The San Luis Drainage Unit in the San Joaquin Valley includes approximately 730,000 acres in the Westlands, Panoche, and Pacheco Water Districts and the southern portions of the San Luis Water District. The soil is some of the most productive in the world, but much of it lies on a layer of impermeable shallow clay that causes minerals and salts to accumulate in groundwater near the surface. Over time, this accumulation reaches into the root zone of crops and has made some of the land infertile. Of the 730,000 acres in the Drainage Unit, the Bureau of Reclamation classifies more than 50 percent of the land, or approximately 379,000 acres, as “drainage impaired.”ⁱ



© Vince King

In 1975, in an attempt to solve the drainage problem, the Bureau of Reclamation completed the San Luis Drain and the Kesterson Reservoir. The Drain, an 82-mile, concrete-lined canal, carried irrigation water that had filtered through the San Luis Unit’s soil to the Reservoir. In theory, the Reservoir, a series of shallow pools, would have allowed the toxic water to be released to the Sacramento-San Joaquin Bay-Delta over time. However, in 1983, U.S. Fish and Wildlife Service field observations noted deformities and high mortality rates in waterfowl at Kesterson Reservoir. Subsequent investigations linked those deformities to high concentrations of selenium in the agricultural wastewater, causing the State Water Resources Control Board to shut the Drain and Reservoir facilities down. Twenty-seven years later, the drainage problems continue to grow.

Of the 730,000 acres in the Drainage Unit, approximately 379,000 are “drainage impaired.”

NEW CROP - SOLAR

In a 2008 feasibility report, the Bureau of Reclamation identified land retirement as the most economically sensible solution, and some landowners in the San Luis Drainage Unit are choosing to retire their lands under a willing-seller program. Ten-thousand acres of drainage-impaired land have already been retired and restored to natural habitat under a pilot retirement project.ⁱⁱ More than 44 thousand acres have already been permanently

“This is huge for this small, dusty farm town.”

Joseph Riofrio, Mendota City Council Member

removed from agricultural production, and an additional 150 thousand acres may be retired.ⁱⁱⁱ As additional land becomes unfarmable, the members of Westlands and the other water districts in the San Luis Drainage Unit should begin converting to large-scale solar projects.

Converting this land will reduce the demand for water from the already over-tapped Bay-Delta, its tributaries, and the Trinity River. As much as 4 acre-feet of demand might be eliminated for every acre of arable land converted to solar generation.^{iv}

The Central Valley receives enough sunlight for cost-effective large-scale photovoltaic (PV) generation. Projects that demonstrate the potential for PV power in the Central Valley are emerging. The Robert O. Schulz Solar Farm in Oakdale has generated more than 1 million kilowatts since its completion in July of 2008, and the 5-megawatt CalRENEW-1 photovoltaic plant broke ground in Mendota in August of 2009. “This is huge for this small, dusty farm town,” City Council Member Joseph Riofrio said.^v

In the coming decade land conversion will present a unique opportunity for the San Luis Drainage Unit’s drainage-impaired districts to renew themselves and their regional economies. For the landowners in the San Luis Drainage Unit, solar energy generation will represent a consistent and reliable source of income. Instead of contending with uncertain water supplies and costly drainage problems, landowners

will benefit from the relative reliability of energy generation. For the economy, the shift will generate consistent regional jobs in solar installation, operations, and maintenance. For the state, it will produce greater energy independence and better water quality.



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PROTECT PRIMARY WATER SOURCE

The Sierra headwaters annually produce over \$2.2 billion in natural products and services for California's health and welfare, including 55-65% of our developed water supply, but the state lacks reliable funding to protect this water source. The State Legislature should create a new rate component for Sierra hydroelectric facilities that would provide consistent funding for the Department of Conservation's Statewide Watershed Program. Stable funding to manage upstream habitat, reduce erosion, and slow runoff in California's headwaters would also create rural jobs, protect communities from wildfire, and increase the efficiency of existing hydroelectric facilities.

VALUE IN THE SIERRA

The Sierra headwaters annually produce more than \$2.2 billion worth of natural goods like water and timber,ⁱ support a \$3 billion tourism industry,ⁱⁱ and produce 74% of California's hydroelectric energy.ⁱⁱⁱ Yet, only 2 percent of the \$2.2 billion in natural value provided by the Sierra is reinvested in the area by local, state and federal governments.^{iv}

In the past, water bonds like Proposition 50, passed by voters in 2002, benefited the Sierra headwaters by funding river restoration. In December 2008, however, the state's over-burdened budget and the global credit crunch caused the state to issue a stop work order on bond funded contracts, adversely affecting or stopping projects that included restoration, critical land acquisition, water quality monitoring and creating fire-defensible space.

The "bond freeze" depreciated the value of bond funding for conservation groups charged with implementing headwater protection in the Sierra. A survey by the Sierra Nevada Alliance on January 12, 2009, showed that 60 percent of surveyed conservation groups in the Sierra Nevada were adversely affected by the bond freeze and stop work order of the previous month.^v The survey reported a 26 percent unemployment rate among those groups, with over a quarter of the 68 conservation organizations dismissing staff, and 64 percent dismissing contractors.^{vi}

Complex challenges resulting from climate change will exacerbate the need for watershed protection in the Sierra. More frequent and severe catastrophic wildfires and increasing erosion of headwater riverbanks place communities at risk, push species to the brink of extinction, compromise downstream water quality and availability, and decrease the availability of water for hydropower generation. Unfortunately, as the financial crisis has demonstrated, bonds are not a reliable way to fund watershed restoration projects.

NEW FUNDING MODEL

There are more reliable funding models available. Beginning in 2002, the Reliable Electrical Services Investment Act required Pacific Gas & Electric, San Diego Gas and Electric, and Southern California Edison to identify a separate electrical rate component to fund programs that enhance system reliability



Courtesy Marion Gee, Sierra Nevada Alliance

and provide in-state benefits. This rate component is collected on the basis of usage for an energy research, demonstration, and development program that serves the public interest. These funds are now administered by the California Energy Commission's Public Interest Research, Development, and Demonstration Fund, which had \$74.8 million in the 2008/09 budget.

The California legislature could use the precedent of the Reliable Electrical Services Investment Act to set up a separate rate component for power generated by hydroelectric operators in California. The funds, collected by the California Public Utilities Commission, would be assigned to the California Department of Conservation's Statewide Watershed Program to be used for planning, restoration and managing watersheds.

Longtime neglect caused by underfunding has led to the deterioration of our mountain meadows, forests and riverbanks, the primary sources of our drinking water. That deterioration has resulted in increased riverbank erosion, which decreases the efficiency of downstream hydroelectric dams, clogging them with sediment. The destruction of mountain meadow habitat has disabled these resources' function as slow-releasing reservoirs. With river water rushing to the hydroelectric

“Longtime neglect caused by underfunding has led to the deterioration of our mountain meadows, forests, and riverbanks, the primary sources of our drinking water.”

dams, some water spills past the turbines and the potential to capture that hydroelectric power is lost. A new hydroelectric fee would produce modest but significant funding for headwater habitat rehabilitation and provide tangible benefits to those dam operators.



Courtesy Feather River CRM

SMALLER WATER BOND

State bonds are the only source of funding for many essential public resources; however, new debt service from a water bond will only be appropriate when California's economy recovers. At that time, California should advance an affordable water bond of about \$3 billion that will finance high priority water projects and restore habitat. A smaller bond could create jobs without imposing cuts to critical public services when the state's economy is at its worst.

TRUE PUBLIC BENEFITS

Many vital public resource projects will require state investments in the near future. Thousands of Californians remain without safe drinking water, and critical restoration work on the Klamath and San Joaquin Rivers and in the Delta will need funding in order to bring back California's salmon fisheries jobs. With these and other projects that offer a benefit to all Californians, the state has a role to play in providing some funding. Over the past decades, the bulk of state funding for watershed restoration and drinking water programs has come from general obligation bonds. However, with the economy in dire straits, we must be selective about the timing and size of a new water bond.

In three years, the financial consequences of previously approved bonds will peak, and the Legislative Analysts Office (LAO) estimates that California's debt service ratio will reach nearly 10 percent of the state's budget.ⁱ At that point, almost one-tenth of the state's annual general fund revenues will go to paying debt on bonds, rather than crucial public services like education, public safety, and healthcare.

When our economy improves and the state can once again afford to make the investment, California should advance an affordable bond to address these needs – one that maximizes investment in public benefits, eliminates “pork” projects, and does not overburden the state's general fund.

An affordable bond, of about \$3 billion, could address the state's most pressing problems, while not overburdening the general fund.

The bond might contain:

- \$1,500 million for public cost sharing of innovative regional water supply projects
- \$300 million for the Clean Water State Revolving Fund
- \$300 million for the Drinking Water State Revolving Fund
- \$250 million for Delta habitat restoration
- \$200 million for Klamath salmon restoration
- \$200 million for San Joaquin salmon restoration
- \$250 million for conservancies to restore watersheds

One way to stretch taxpayers' dollars would be to increase, above 50 percent, the funding match requirement for local jurisdictions (while retaining an exemption from this match requirement for disadvantaged communities).

This affordable bond would fund regional clean water and watershed restoration projects and the public share of innovative water supply projects. This shared approach to funding pioneering water supply projects has a proven track record. The \$480 million Orange County Groundwater Replenishment System, for example, which supplies more than 70,000 acre-feet of water a year, was split between the Orange County Water and Sanitation Districts, with less than 25% coming from state and federal grants.ⁱⁱ

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